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On the reduction of splash-back ANDREW DICKERSON, JEREMY STEPHEN, University of Central Florida — The reduction of splash height following the impact of a solid body on a liquid surface is relevant to multiple sectors including military missile entry, industrial processing, and visits to public restrooms. While most studies have viewed splashes in the context of control of impactor shape and surface properties, we here consider the effects of splash height following modification of a liquid surface by surfactants and thin fabrics. Smooth, hydrophilic, free-falling spheres are allowed to impact a quiescent liquid surface of modified surface conditions while filmed with a high-speed camera. We measure splash heights and cavity depths formed by impacting spheres across Froude numbers 3 - 6.5. As expected, lowering the surface tension of the liquid increased splash height with respect to pure water. The introduction of fabric to the surface has an more unpredictable effect. With respect to unaltered impact conditions, ample inclusion of fabric on the surface reduces splash height, while a meager amount of fabric amplifies splashing due to the augmentation of cavity formation preceding a Worthington jet.

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